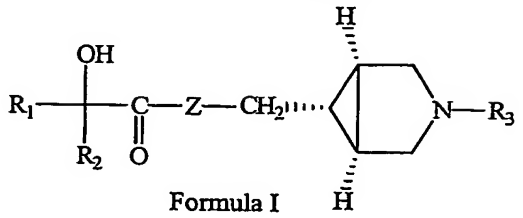
WE CLAIM:

1. A compound having the structure of Formula I:



Formula I

and its pharmaceutically acceptable salts, pharmaceutically acceptable solvates, esters, enantiomers, diastereomers, N-oxides, polymorphs, prodrugs, metabolites, wherein

R_1 and R_2 are independently selected from C_1-C_6 alkyl, C_3-C_7 cycloalkyl, C_3-C_7 cycloalkenyl or optionally substituted phenyl wherein optional substituent(s) is/are selected from C_1-C_3 alkyl, C_1-C_3 alkoxy or halogen;

R_3 represents C_1-C_6 alkyl wherein 1-3 hydrogen atom(s) may be replaced by C_5-C_7 cycloalkyl, 1, 3-dioxo-1, 3-dihydro-isoindolyl or optionally substituted phenyl wherein the optional substituent is/are selected from C_1-C_4 alkyl or halogen;

Z represents oxygen or NR_4 wherein R_4 represents hydrogen or C_1-C_3 alkyl.

2. A compound selected from:

(2R, 2S) (1α, 5α, 6α)-N-{-[4-(1,3-dioxo-1,3-dihydro-isoindol-2-yl)-butyl]-3-azabicyclo[3.1.0]hex-6-yl-methyl}-2-hydroxy-2-cyclopentyl-2-phenylacetamide (Compound No. 1)

(2R) (1α, 5α, 6α)-N-(3-Benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-cyclopent-1-enyl-2-phenylacetamide (Compound No. 2)

(2R, 2S) (1α, 5α, 6α)-N-(3-Isopropyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-cyclopentyl-2-phenylacetamide (Compound No. 3)

(2R, 2S) (1α, 5α, 6α)-N-(3-Diphenylmethyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-cyclopentyl-2-phenylacetamide (Compound No. 4)

(2R, 2S) (1α, 5α, 6α)-N-(3-sec-butyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-cyclopentyl-2-phenylacetamide (Compound No. 5)

(2R, 2S) (1α, 5α, 6α)-N-(3-Benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-(3-pentyl)-2-phenylacetamide (Compound No. 6)

(2R, 2S) (1α, 5α, 6α)-N-(3-Benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-cyclohexyl-2-(4-methoxyphenyl) acetamide (Compound No. 7)

(2R, 2S) (1α, 5α, 6α)-N-(3-Benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-phenyl-(N-ethyl)-2-phenylacetamide (Compound No. 8)

(2R, 2S) (1α, 5α, 6α)-N-(3-Benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-cyclopentyl-(N-ethyl)-2-phenylacetamide (Compound No. 9)

(2R, 2S) (1α, 5α, 6α)-N-(3-Benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-cyclohexyl-(N-ethyl)-2-phenylacetamide (Compound No. 10)

(2R, 2S) (1α, 5α, 6α)-N-(3-Benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)- 2-hydroxy-2-(3-pentyl)-(N-methyl)-2-phenylacetamide (Compound No. 11)

(2R, 2S) (1α, 5α, 6α)-N-(3-Benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-(sec-butyl)-(N-methyl)-2-phenylacetamide (Compound No. 12)

(2R, 2S) (1α, 5α, 6α)-N-(3-Benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-isopropyl-(N-methyl)-2-phenylacetamide (Compound No. 13)

(2R, 2S) (1α, 5α, 6α)-N-[3-(4-tert-butyl-benzyl)-3-azabicyclo[3.1.0]hex-6-yl-methyl]-2-hydroxy-2-cyclopentyl-2-phenylacetamide (Compound No. 14)

(2R, 2S) (1α, 5α, 6α)-N-(3-Benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-cyclohex-2-enyl-2-phenylacetamide (Compound No. 15)

(2R, 2S) (1α, 5α, 6α)-N-[3-(4-methylbenzyl)-3-azabicyclo[3.1.0]hex-6-yl-methyl]-2-hydroxy-2,2-diphenylacetamide (Compound No. 16)

(2R, 2S) (1α, 5α, 6α)-N-[3-(4-methylbenzyl)-3-azabicyclo[3.1.0]hex-6-yl-methyl]-2-hydroxy-2-cyclopentyl-2-phenylacetamide (Compound No. 17)

(2R, 2S) (1α, 5α, 6α)-N-[3-(4-methylbenzyl)-3-azabicyclo[3.1.0]hex-6-yl-methyl]-2-hydroxy-2-cyclohexyl-2-phenylacetamide (Compound No. 18)

(2R, 2S) (1α, 5α, 6α)-N-[3-(3-methylbenzyl)-3-azabicyclo[3.1.0]hex-6-yl-methyl]-2-hydroxy-2,2-diphenylacetamide (Compound No. 19)

(2R, 2S) (1α, 5α, 6α)-N-[3-(3-fluorobenzyl)-3-azabicyclo[3.1.0]hex-6-yl-methyl]-2-hydroxy-2,2-diphenylacetamide (Compound No. 20)

(2R, 2S) (1α, 5α, 6α)-N-[3-(3-fluorobenzyl)-3-azabicyclo[3.1.0]hex-6-yl-methyl]-2-hydroxy-2-cyclohexyl-2-phenylacetamide (Compound No. 21)

(2R, 2S) (1α, 5α, 6α)-N-[2-(2,4-difluorobenzyl)-3-azabicyclo[3.1.0]hex-6-yl-methyl]-2-hydroxy-2-cyclohexyl-2-phenylacetamide (Compound No. 22)

(2R, 2S) (1α, 5α, 6α)-N-[3-(2,4-difluorobenzyl)-3-azabicyclo[3.1.0]hex-6-yl-methyl]-2-hydroxy-2,2-diphenylacetamide (Compound No. 23)

(2R, 2S) (1α, 5α, 6α)-N-[3-(3-methylbenzyl)-3-azabicyclo[3.1.0]hex-6-yl-methyl]-2-hydroxy-2-cyclopentyl-2-phenylacetamide (Compound No. 24)

(2R, 2S) (1α, 5α, 6α)-N-(3-benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-(4-methylphenyl)-2-phenylacetamide (Compound No. 25)

(2R, 2S) (1α, 5α, 6α)-N-(3-benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-(4-methylphenyl)-(N-methyl)-2-phenylacetamide (Compound No. 26)

(2R, 2S) (1α, 5α, 6α)-N-(3-benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-(4-fluorophenyl)-2-phenylacetamide (Compound No. 27)

(2R, 2S) (1α, 5α, 6α)-(3-benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-(4-fluorophenyl)-2-phenyl acetic acid ester (Compound No. 28)

(2R, 2S) (1α, 5α, 6α)-N-(3-benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-(4-fluorophenyl)-(N-methyl)-2-phenylacetamide (Compound No. 29)

(2R, 2S) (1α, 5α, 6α)-N-(3-benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-(3-methylphenyl)-2-phenylacetamide (Compound No. 30)

(2R, 2S) (1α, 5α, 6α)-N-(3-benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-(3-methylphenyl)-(N-methyl)-2-phenylacetamide (Compound No. 31)

(2R, 2S) (1α, 5α, 6α)-(3-benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-(3-methylphenyl)-2-phenyl acetic acid ester (Compound No. 32)

(2R, 2S) (1α, 5α, 6α)-(3-benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-cyclopentyl-2-(3-methylphenyl) acetic acid ester (Compound No. 33)

(2R, 2S) (1α, 5α, 6α)-(3-benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-cyclopentyl-2-(3-methylphenyl) acetic acid ester tartarate salt (Compound No. 34)

(2R, 2S) (1α, 5α, 6α)-N-(3-benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-cyclopentyl-2-(3-methylphenyl) acetamide (Compound No. 35)

(2R, 2S) (1α, 5α, 6α)-N-(3-benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-cyclopentyl-2-(3-methylphenyl) acetamide tartarate salt (Compound No. 36)

(2R, 2S) (1α, 5α, 6α)-N-(3-benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2,2-di(4-fluorophenyl)acetic acid ester (Compound No. 37)

(2R, 2S) (1α, 5α, 6α)-N-(3-benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl]-2-hydroxy-2,2-di(4-fluorophenyl)-acetamide (Compound No. 38)

(2R, 2S) (1α, 5α, 6α)-(3-benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl]-2-hydroxy-2-cyclobutyl-2-phenyl acetic acid ester (Compound No. 39)

(2R, 2S) (1α, 5α, 6α)-N-(3-cyclohexylmethyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-cyclopentyl-2-phenylacetamide (Compound No. 40)

(2R) (1α, 5α, 6α)-N-(3-benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-cyclopentyl-(N-methyl)-2-phenylacetamide (Compound No. 41)

(2R, 2S) (1α, 5α, 6α)-N-(3-benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl]-2-hydroxy-2-cyclopentyl-2-(4-methylphenyl) acetamide (Compound No. 42)

(2R, 2S) (1α, 5α, 6α)-(3-benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-phenyl-2-(4-methylphenyl) acetic acid ester (Compound No. 43)

(2R, 2S) (1α, 5α, 6α)-(3-benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-methyl-2-phenyl acetic acid ester (Compound No. 44)

(2R, 2S) (1α, 5α, 6α)-N-(3-benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl]-2-hydroxy-2-methyl-2-phenyl acetamide (Compound No. 45)

(2R, 2S) (1α, 5α, 6α)-(3-benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-isopropyl-2-phenyl acetic acid ester (Compound No. 46)

(2R, 2S) (1α, 5α, 6α)-N-(3-methyl-3-azabicyclo[3.1.0]hex-6-yl-methyl]-2-hydroxy-2-phenyl-(N-methyl)-2-phenylacetamide (Compound No. 47)

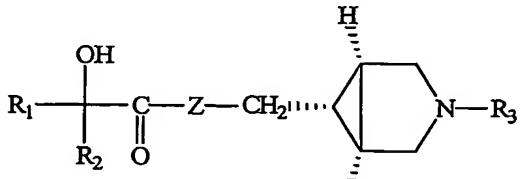
(2R, 2S) (1α, 5α, 6α)-N-(3-benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl]-2-hydroxy-2-(3-methylphenyl)-2-(3-methylphenyl) acetamide (Compound No. 48)

(2R, 2S) (1α, 5α, 6α)-(3-benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl]-2-hydroxy-2-(3-pentyl)-2-phenyl acetic acid ester (Compound No. 49)

(2R, 2S) (1α, 5α, 6α)-N-(3-benzyl-3-azabicyclo[3.1.0]hex-6-yl-methyl)-2-hydroxy-2-methyl-(N-methyl)-2-phenylacetamide (Compound No. 50)

3. A pharmaceutical composition comprising a therapeutically effective amount of a compound as defined in claim 1 or 2 together with pharmaceutically acceptable carriers, excipients or diluents.

4. A method for treatment or prophylaxis of an animal or a human suffering from a disease or disorder of the respiratory, urinary and gastrointestinal systems, wherein the disease or disorder is mediated through muscarinic receptors, comprising administering to said animal or human, a therapeutically effective amount of a compound having the structure of Formula I,



Formula I

or its pharmaceutically acceptable salts, pharmaceutically acceptable solvates, esters, enantiomers, diastereomers, N-oxides, polymorphs, prodrugs or metabolites, wherein:

R_1 and R_2 are independently selected from C_1-C_6 alkyl, C_3-C_7 cycloalkyl, C_3-C_7 cycloalkenyl or optionally substituted phenyl wherein optional substituent(s) is/are selected from C_1-C_3 alkyl, C_1-C_3 alkoxy or halogen;

R_3 represents C_1-C_6 alkyl wherein 1-3 hydrogen atom(s) may be replaced by C_5-C_7 cycloalkyl, 1, 3-dioxo-1, 3-dihydro-isoindolyl or optionally substituted phenyl wherein the optional substituent is/are selected from C_1-C_4 alkyl or halogen;

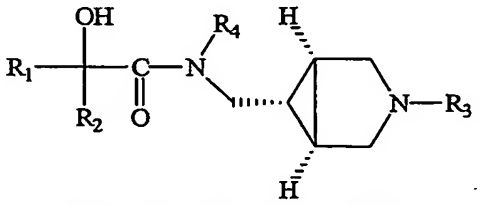
Z represents oxygen or NR_4 wherein R_4 represents hydrogen or C_1-C_3 alkyl.

5. The method according to claim 4 wherein the disease or disorder is urinary incontinence, lower urinary tract symptoms (LUTS), bronchial asthma, chronic obstructive pulmonary disorders (COPD), pulmonary fibrosis, irritable bowel syndrome, obesity, diabetes or gastrointestinal hyperkinesis.

6. The method for treatment or prophylaxis of an animal or a human suffering from a disease or disorder of the respiratory, urinary and gastroinstestinal systems, wherein the disease or disorder is mediated through muscarinic receptors, comprising administering to said animal or human, a therapeutically effective amount of the pharmaceutical composition according to claim 3.

7. The method according to claim 6 wherein the disease or disorder urinary incontinence, lower urinary tract symptoms (LUTS), bronchial asthma, chronic obstructive pulmonary disorders (COPD), pulmonary fibrosis, irritable bowel syndrome, obesity, diabetes or gastrointestinal hyperkinesis.

8. A process of preparing a compound of Formula VI,



Formula VI (Formula I, Z=NR4)

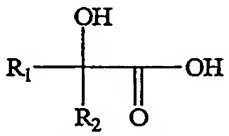
and its pharmaceutically acceptable salts, pharmaceutically acceptable solvates, esters, enantiomers, diastereomers, N-oxides, polymorphs, prodrugs or metabolites, wherein

R_1 and R_2 are independently selected from C_1-C_6 alkyl, C_3-C_7 cycloalkyl, C_3-C_7 cycloalkenyl or optionally substituted phenyl wherein optional substituent(s) is/are selected from C_1-C_3 alkyl, C_1-C_3 alkoxy or halogen;

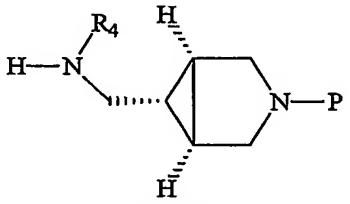
R_3 represents C_1-C_6 alkyl wherein 1-3 hydrogen atom(s) may be replaced by C_5-C_7 cycloalkyl, 1, 3-dioxo-1, 3-dihydro-isoindolyl or optionally substituted phenyl wherein the optional substituent is/are selected from C_1-C_4 alkyl or halogen;

R_4 represents hydrogen or C_1-C_3 alkyl, comprising

(a) condensing a compound of Formula II with a compound of Formula III

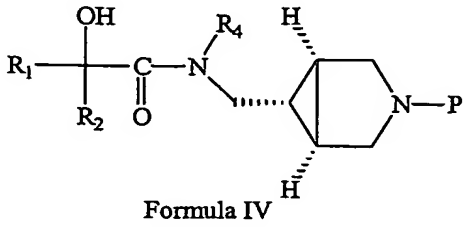


Formula II



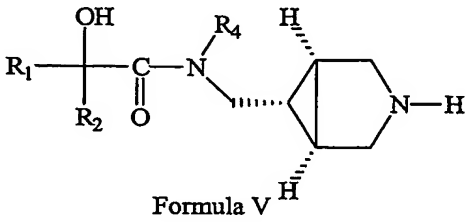
Formula III

to give a protected compound of Formula IV wherein R_1, R_2 and R_4 are the same as defined earlier and P is a protecting group for an amino group



Formula IV

(b) deprotecting the compound of Formula IV in the presence of a deprotecting agent to give an unprotected intermediate of Formula V wherein R_1, R_2 and R_4 are the same as defined earlier,



Formula V

(c) the intermediate of Formula V is N-alkylated or benzylated with a suitable alkylating or benzylating agent, L-R_3 wherein L is any leaving group and R_3 is the same as defined earlier, to give a compound of Formula VI wherein R_1, R_2, R_3 and R_4 are the same as defined earlier.

9. The process according to claim 8 wherein P is any protecting group for an amino group and is selected from benzyl and t-butyloxy carbonyl groups.

10. The process according to claim 8 wherein the reaction of a compound of Formula II with a compound of Formula III to give a compound of Formula IV is carried out in the presence of N-methylmorpholine and 1-hydroxybenzotriazole and a condensing agent selected from 1-(3-dimethyl amino propyl)-3-ethyl carbodiimide hydrochloride (EDC), 1,8-diazabicyclo [5.4.0]undec-7-ene (DBU) or 1,3-dicyclohexylcarbodiimide (DCC).

11. The process according to claim 8 wherein the reaction of a compound of Formula II with a compound of Formula III to give a compound of Formula IV is carried out in a solvent selected from dimethylformamide, dimethyl sulfoxide, toluene, xylene or chloroform.

12. The process according to claim 8 wherein the reaction of compound of Formula II with a compound of Formula III is carried out at 0-140°C.

13. The process according to claim 8 wherein the deprotection of a compound of Formula IV to give a compound of Formula V is carried out with a deprotecting agent selected from palladium on carbon and hydrogen, ammonium formate and palladium on carbon, trifluoroacetic acid (TFA) or hydrochloric acid.

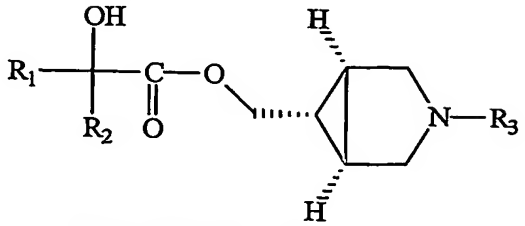
14. The process according to claim 8 wherein the deprotection of a compound of Formula IV to give a compound of Formula V is carried out in a suitable organic solvent selected from methanol, ethanol, tetrahydrofuran or acetonitrile.

15. The process according to claim 8 wherein the N-alkylation or benzylation of a compound of Formula V to give a compound of Formula VI is carried out with an alkylating or benzylating agent, L-R_3 wherein L is any leaving group and R_3 is the same as defined earlier.

16. The process according to claim 15 wherein the leaving group is selected from halogen, O-mestyl or O-tosyl groups.

17. The process according to claim 15 wherein the N-alkylation or benzylation of a compound of Formula V to give a compound of Formula VI is carried out in the optional presence of potassium carbonate and potassium iodide in an organic solvent selected from dimethylformamide, dimethylsulfoxide, tetrahydrofuran or acetonitrile.

18. A process of preparing a compound of Formula X,



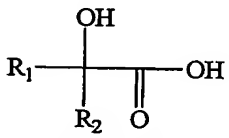
Formula X (Formula I, Z=O)

and its pharmaceutically acceptable salts, pharmaceutically acceptable solvates, esters, enantiomers, diastereomers, N-oxides, polymorphs, prodrugs or metabolites, wherein

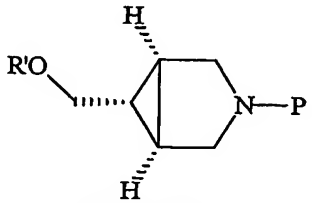
R_1 and R_2 are independently selected from C_1-C_6 alkyl, C_3-C_7 cycloalkyl, C_3-C_7 cycloalkenyl or optionally substituted phenyl wherein optional substituent(s) is/are selected from C_1-C_3 alkyl, C_1-C_3 alkoxy or halogen; and

R_3 represents C_1-C_6 alkyl wherein 1-3 hydrogen atom(s) may be replaced by C_5-C_7 cycloalkyl, 1, 3-dioxo-1, 3-dihydro-isoindolyl or optionally substituted phenyl wherein the optional substituent is/are selected from C_1-C_4 alkyl or halogen, comprising

(a) condensing a compound of Formula II with a compound of Formula VII

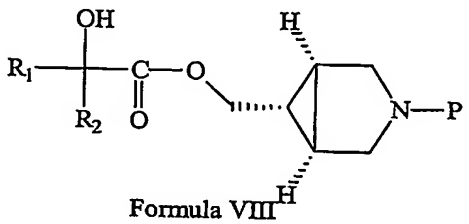


Formula II



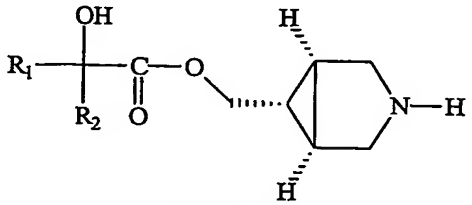
Formula VII

wherein R′ is protecting group for hydroxy group, to give a protected compound of Formula VIII wherein R_1 and R_2 are the same as defined earlier and P is a protecting group for an amino group,



Formula VIII

(b) deprotecting the compound of Formula VIII in the presence of a deprotecting agent to give an unprotected intermediate of Formula IX wherein R_1 and R_2 are the same as defined earlier,



Formula IX

(c) the intermediate of Formula IX is N-alkylated or benzylated with a suitable alkylating or benzylating agent L-R_3, wherein L is leaving group, to give a compound of Formula X wherein R_1, R_2 and R_3 are the same as defined earlier.

19. The process according to claim 18 wherein P is any protecting group for an amino group selected from benzyl and t-butyloxy carbonyl groups.

20. The process according to claim 18 wherein R' is any protecting group for a hydroxy group selected from p-toluene sulfonyl or methane sulfonyl groups.

21. The process according to claim 18 wherein the reaction of a compound of Formula II with a compound of Formula VII to give a compound of Formula VIII is carried out in the presence of a condensing agent selected from 1,8-diazabicyclo[5.4.0]undecan-7-ene (DBU) or 1,4-diazabicyclo[2.2.2]octane (DABCO).

22. The process according to claim 18 wherein the reaction of a compound of Formula II with a compound of Formula VII to give a compound of Formula VIII is carried out in a solvent selected from benzene, toluene or xylene.

23. The process according to claim 18 wherein the reaction of compound of Formula II with a compound of Formula VII is carried out at 0-140°C.

24. The process according to claim 18 wherein the deprotection of a compound of Formula VIII to give a compound of Formula IX is carried out with a deprotecting agent selected from palladium on carbon and hydrogen gas and ammonium formate and palladium on carbon.

25. The process according to claim 18 wherein the deprotection of a compound of Formula VIII to give a compound of Formula IX is carried out in a suitable organic solvent selected from methanol or ethanol.

26. The process according to claim 18 wherein the N-alkylation or benzylation of a compound of Formula IX to give a compound of Formula X is carried out with a suitable alkylating or benzylating agent, L-R_3 wherein L is any leaving group and R_3 is the same as defined earlier.

27. The process according to claim 25 wherein the leaving group selected from halogen, O-mestyl or O-tosyl groups.

28. The process according to claim 25 wherein the N-alkylation or benzylation of a compound of Formula IX to give a compound of Formula X is carried out in an organic solvent selected from dimethylformamide, dimethylsulfoxide, tetrahydrofuran or acetonitrile.